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EXAMINER				
CHUO, TONY SHENG HSIANG				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/525,815

Applicant(s)

SCOTT ET AL.

Examiner

Tony Chuo

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 5/31/05 5/16/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 5/31/05 and 5/16/06 were filed on 5/31/05 and 5/16/06. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Drawings

3. The drawings filed 2/25/05 are accepted by the examiner.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The limitation "the step of contacting a fuel and an oxidant on said anode" is not supported by the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 13 and 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 13, it is unclear how a fuel and an oxidant are both contacting an anode. For purpose of compact prosecution, claim 13 is construed as reciting "the step of contacting a fuel on said anode ...".
8. Claim 14 provides for the use of a membrane electrode assembly, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 101

9. Claim 14 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1, 5-7, 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamada et al (US 2002/0068215).

Regarding claims 1, 13, and 14, the Hamada reference discloses a fuel cell comprising a fuel electrode and an air electrode that are disposed on both faces of an electrolyte film (ion exchange membrane), wherein the fuel electrode and the air electrode are immediately adjacent the electrolyte, and wherein the fuel electrode comprises a catalyst layer "2" (electrocatalyst) on a mesh sheet "20" (support) that is a conductive material (See paragraphs [0035], claim 1, and Figure 1). Examiner's note: It is inherent that the fuel cell is operated by contacting a fuel to the anode or fuel electrode.

Regarding claim 5, it also discloses a catalyst layer that contains a noble metal that is mainly platinum (See paragraph [0004]).

Regarding claims 6 and 7, it also discloses a metal mesh that has a wire diameter of 0.2 mm and a porosity of 70 to 95% which inherently has a minimum pore

size of 5 μm or 50 μm (See paragraph [0036],[0056]).

Regarding claims 10 and 11, it also discloses a mesh sheet that is made of titanium (See paragraph [0036]).

Regarding claim 12, it also discloses an intermediate layer "23" between the catalyst layer "2" and the mesh sheet "20" (See paragraph [0044] and Figure 2).

12. Claims 1, 5-7, 10, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Doyon (US 5558948).

Regarding claims 1, 13, and 14, the Doyon reference discloses a fuel cell "11" comprising an anode electrode "1" and a cathode electrode "13" that are immediately adjacent the electrolyte tile "12" (ion exchange membrane), and wherein the anode electrode comprises a cohesive member "2" (electrocatalyst) on a support member "3" (mesh) that is a conductive material (See column 3 lines 3-48, and Figure 2).

Examiner's note: It is inherent that the fuel cell is operated by contacting a fuel to the anode or fuel electrode.

Regarding claim 5, it also discloses a cohesive member "2" that contains nickel alloy (See column 3, lines 3-9).

Regarding claims 6 and 7, it also discloses support member that includes through openings each of which has a size of 0.005 inch (127 μm) (See column 3, lines 10-11). Examiner's note: Claims 6 and 7 are construed as reciting a mesh that has a pore size greater than or equal to 5 μm or 50 μm .

Regarding claims 10, it also discloses a support member that is made of nickel (See column 3, lines 7-9).

13. Claims 1, 5, 10, 12, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by DeMarinis et al (US 6368476).

Regarding claims 1, 10, 13, and 14, the DeMarinis reference discloses a solid polymer electrolyte fuel cell comprising an anode electrode and a cathode electrode that are immediately adjacent an ion-conducting membrane, wherein the anode electrode and the cathode electrode each comprises a catalyst layer (electrocatalyst) on a support that is a metal mesh (See column 1 line 18 to column 2 line 21). Examiner's note: It is inherent that the fuel cell is operated by contacting a fuel to the anode or fuel electrode.

Regarding claim 5, it also discloses a catalytic layer that consists of very fine particles of precious metal (See column 1, lines 22-23).

Regarding claims 12, it also discloses hydrophobic wet-proofing layer that is between the catalyst layer and the support layer (See column 1, lines 19-22).

14. Claims 1, 5, 10, 11, 13, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaz et al (US 2002/0150812).

Regarding claims 1, 10, 13, and 14, the Kaz reference discloses a fuel cell comprising an anode gas diffusion electrode and a cathode gas diffusion electrode that are immediately adjacent an electrolyte membrane, wherein the anode gas diffusion electrode and the cathode gas diffusion electrode each comprises a reaction layer "100" (electrocatalyst) on a carrier "98" (support) that is a metal mesh (See paragraphs [0027],[0078] and Figure 3). Examiner's note: It is inherent that the fuel cell is operated by contacting a fuel to the anode electrode.

Regarding claim 5, it also discloses a catalyst material such as platinum (See paragraph [0078]).

Regarding claim 11, it also discloses a carrier that is a titanium mesh (See paragraph [0078]).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al (US 2002/0068215). The Hamada reference is applied to claim 1 for reasons stated above.

However, Hamada et al does not expressly teach a mesh that comprises a plurality of layers.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Hamada mesh sheet to include a plurality of layers because the duplication of parts was held to have been obvious (*In re Harza*, 274 F.2d 669, 671, 124 USPQ 378, 380 (CCPA 1960)).

However, Hamada et al does not expressly teach adjacent layers of the mesh that are oriented at an angle to one another.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Hamada mesh sheet to include adjacent layers of the mesh that are oriented at an angle to one another because the rearrangement of parts was held to have been obvious (*In re Japikse* 86 USPQ 70 (CCPA 1950)).

17. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al (US 2002/0068215) in view of Pollack (US 3835514). The Hamada reference is applied to claim 1 for reasons stated above.

However, Hamada et al does not expressly teach a mesh that comprises a plurality of layers, wherein adjacent layers of the mesh are oriented at an angle to one another. The Pollack reference teaches the concept of an electrode comprising a plurality of laminated metallic fibrous sheets, wherein the electrode consists of layers of parallel arrays of fine conductive fibers running in the longitudinal direction and layers of parallel arrays of fibers running at an orientation angle between 30° to 90° from the longitudinal direction of the fibers (See column 2, lines 44-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Hamada mesh sheet to include a mesh that comprises a plurality of layers, wherein adjacent layers of the mesh are oriented at an angle to one another in order to strengthen the electrode by providing a stronger structure with a large number of contact points between the layers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795